LPDES PERMIT NO. LA0084123, AI No. 3262

STATEMENT OF BASIS
FOR THE DRAFT MODIFIED LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA

1. **Company/Facility Name:** Hobson Galvanizing, Inc.
2402 Engineers Road
Belle Chasse, Louisiana 70037

2. **Issuing Office:** Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

3. **Prepared By:** Yvonne Baker

Date Prepared: March 20, 2006

4. **Permit Action/Status:**

A. Reason For Permit Action:
Proposed modification of an existing Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term.

B. LPDES permit - LPDES permit effective date: April 1, 2004
LPDES permit expiration date: March 31, 2009

C. Application received on February 7, 2006

5. **Facility Information:**

A. Location – 2402 Engineers Road, Belle Chasse, Plaquemines Parish
Latitude 29°50'35", Longitude 90°02'21"

B. FACILITY TYPE/ACTIVITY – hot dip galvanizing facility

Hobson Galvanizing is an existing hot dip galvanizing facility. All material received at Hobson Galvanizing for processing is generally new steel. If the material to be galvanized is very old, and/or very rusty, the fabricator must blast clean the material before it comes to Hobson for galvanizing.

Once in the galvanizing plant, the material is placed in a pickling vat containing a 5-10 percent solution of sulfuric acid and 90-95 percent water. When the material has completed pickling, it is rinsed in a water tank and then rinsed in a tank containing a 10% mixture of zinc ammonium chloride and 90 percent water. All of the tanks used in the above processes are enclosed in a concrete containment sump as part of Hobson's spill prevention containment plan.

The material is then ready to be galvanized in a 58 foot long, 7 foot deep, 7 foot wide galvanizing kettle. The kettle is then heated to a temperature of 840 degrees F. High grade or prime grade zinc, in block form, is added to the kettle as required. The zinc blocks are approximately 99.9% pure zinc with trace amounts of aluminum to keep the galvanized material as bright as possible. Once the material has been removed from the galvanizing kettle, it is rinsed in a tank of water to reduce surface temperature so that post galvanizing handling can be expedited.

The process wastewater discharge is regulated under the EPA Effluent Limitation Guidelines (ELG), Iron and Steel Manufacturing category, found at 40 CRF §420.92.a.4. Additional discharges include

boiler blowdown water (Outfall 002) and sanitary wastewaters (Outfalls 003 and 004). Stormwater currently sheet flows off the property and its consolidation and monitoring was not required in the current permit, based on its low contamination potential, though it is addressed in Part II BMP language.

A groundwater corrective action project was implemented at the facility in the summer of 2005. Earlier investigation revealed that the groundwater in certain areas of the plant exhibited relatively high levels of zinc and a low pH. These were primarily situated around a form surface impoundment which received spent galvanizing bath solution in the 1970s and 1980s. The impoundment has been closed under LDEQ oversight and approval. The corrective action project was initiated at the request of the LDEQ, Office of Environmental Assessment, Remediation Services Division, as groundwater concentration of zinc exceeded the applicable water quality standard.

C. FEE RATE

1. Fee Rating Facility Type: Minor
2. Complexity Type: III
3. Wastewater Type: II
4. SIC code: 3479

6. Outfall Information

Outfall 001

Discharge Type: intermittent batch discharge of treated hot dip steel galvanizing operation process wastewater
Treatment: None - offsite disposal (currently); Neutralization and precipitation of process waste and drying of sludge (proposed)
Location: at the point of discharge from the neutralization tank located at the north end of the plant near the property line (Latitude 29°50'41", Longitude 90°02'25")
Flow: 400 GPD
Discharge Route: Intracoastal Waterway via local drainage and Bayou Barataria

Outfall 002

Discharge Type: boiler blowdown water
Treatment: none
Location: at the point of discharge at the right rear of the plant, next to the boiler on the northwest corner of the property (Latitude 29°50'40", Longitude 90°02'25")
Flow: 50 GPD
Discharge Route: Intracoastal Waterway via local drainage and Bayou Barataria

Outfall 003

Discharge Type: treated sanitary wastewater
Treatment: package sanitary wastewater treatment plant
Location: at the point of discharge from the package sanitary wastewater treatment plant serving the office located in the southeast corner of the property (Latitude 29°50'36", Longitude 90°02'20")
Flow: 150 GPD
Discharge Route: Intracoastal Waterway via local drainage and Bayou Barataria

Outfall 004

Discharge Type: treated sanitary wastewater and stormwater runoff
Treatment: package sanitary wastewater treatment plant
Location: at the point of discharge from the northwest side of the facility
(Latitude 29°50'38", Longitude 90°02'24")
Flow: 1,750 GPD
Discharge Route: Intracoastal Waterway via local drainage and Bayou Barataria

Outfall 005

Discharge Type: intermittent discharge of treated groundwater
Treatment: limestone/alkaline material filtration system
Location: at the point of discharge from the collection box prior to mixing with other waters
(Latitude 29°50'43", Longitude 90°02'26")
Flow: intermittent
Discharge Route: Intracoastal Waterway via local drainage and Bayou Barataria

6. Receiving Waters

STREAM - Intracoastal Waterway via local drainage and Bayou Barataria

BASIN AND SEGMENT - Barataria Basin, Subsegment 020601

DESIGNATED USES - a. primary contact recreation
b. secondary contact recreation
c. propagation of fish and wildlife

7. TMDL Status

Subsegment 020601, Intracoastal Waterway – Bayou Villars to Mississippi River, is not listed on LDEQ's Final 2004 303(d) List as impaired, and to date no TMDL's have been established. A reopener clause will be established in the permit to allow for the requirement of more stringent effluent limitations and requirements as imposed by any future TMDLs.

8. Proposed Modification:

The addition of Outfall 005- treated groundwater. See Rationale below.

9. Compliance History/Comments

A. Compliance History

1. WQMD: There are no open, appealed, or pending OEC enforcement actions as of March 20, 2006.

2. DMR Review: A DMR review of years 2004 and 2005 noted the following: Outfall 004 - 1 TSS excursion in the 4th quarter of 2004 and 1 TSS excursion in the 1st quarter of 2005.

An exceedance in the fecal coliform permit limitation in the 4th quarter of 2005 for Outfalls 003 and 004 was self-reported by the facility on January 23, 2006.

An exceedance in the fecal coliform permit limitation in the 4th quarter of 2005 for Outfalls 003 and 004 was self-reported by the facility on January 23, 2006.

10. Endangered Species

The receiving waterbody, Subsegment 020601 of the Barataria Basin is not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U.S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated October 21, 2005 from Watson (FWS) to Levy (LDEQ). Therefore, in accordance with the Memorandum of Understanding between the LDEQ and the FWS, no further informal (Section 7, Endangered Species Act) consultation is required. It was determined that the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat.

11. Historic Sites

The discharge is from an existing facility location, which does not include an expansion on undisturbed soils. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the "Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits" no consultation with the Louisiana State Historic Preservation Officer is required.

12. Tentative Determination:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to modify the permit for the discharge described in the application.

13. Public Notices:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the statement of basis. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

Rationale for Hobson Galvanizing, Inc.

5. **Outfall 005** the discharge of treated groundwater (intermittent).

Pollutant	Limitation Mo. Avg:Daily Max (mg/l)	Reference
Flow (MGD)	Report:Report	LPDES General Permit LAG940000
TOC	50:50	LPDES General Permit LAG940000
Lead, Total	50µg/L:50µg/L	LPDES General Permit LAG940000
Zinc, Total	5.8:13.8	Water Quality Based Limitations
pH	6 su to 9 su	LPDES General Permit LAG940000

Treatment: limestone/alkaline material filtration system.

Monitoring Frequency: 1/week all parameters at the point of discharge from the collection box prior to mixing with other waters.

Limits Justification: BPJ from the General Permit for Discharges of Treated Groundwater, Potentially Contaminated Storm Water, and/or Associated Wastewater LAG9400000, for Flow, TOC, Lead, Total and pH. Water Quality Based Limitations were calculated for Zinc, Total due to the laboratory results reported in the application.

Developer: Bruce Fielding Time: 08:38 AM

Software: Lotus 4.0 LA0084123, AI3262

Revision date: 12/13/02

Water Quality Screen for Hobson Galvanizing, Inc.

Input variables:

Receiving Water Characteristics:		Dilution:		Toxicity Dilution Series:	
		ZID Fs =	0.1	Biomonitoring dilution:	0.0615101
Receiving Water Name=	Intracoastal Waterway			Dilution Series Factor:	0.75
Critical flow (Qr) cfs=	0.1	MZ Fs =	1		
Harm. mean/avg tidal cfs=	1	*Critical Qr (MGD)=*	*0.06463*		*Percent Effluent*
Drinking Water=1 HHNPCR=2		Harm. Mean (MGD)=	0.6463	Dilution No. 1	8.201%
Marine, 1=y, 0=n		ZID Dilution =	0.0582835	Dilution No. 2	6.1510%
Rec. Water Hardness=	187.6	MZ Dilution =	0.006151	Dilution No. 3	4.6133%
Rec. Water TSS=	*22*	*HHnc Dilution=*	*0.006151*	*Dilution No. 4*	3.4599%
Fisch/Specific=1,Stream=0		HHc Dilution=	0.0006185	Dilution No. 5	2.5950%
Diffuser Ratio=		ZID Upstream =	16.1575		
		MZ Upstream =	161.575	Partition Coefficients; Dissolved-->Total	
Effluent Characteristics:		MZhhnc Upstream=	161.575		
Permittee=				METALS	FW
Permit Number=	LA0084123, AI 3262			Total Arsenic	2.1058478
Facility flow (Qef),MGD=	*0.0004*	*MZhhc Upstream=*	1615.75	*Total Cadmium*	3.6763632
		ZID Hardness=	---	Chromium III	5.1716596
Outfall Number =	005	MZ Hardness=	---	Chromium VI	1
Eff. data, 2=lbs/day	1	ZID TSS=	---	Total Copper	3.323075
MQL, 2=lbs/day	1	MZ TSS=	---	Total Lead	6.1956821
Effluent Hardness=	N/A	Multipliers:		Total Mercury	2.8813033
Effluent TSS=	N/A	WLAa --> LTAa	0.32	Total Nickel	2.8511339
WQBL ind. 0=y, 1=n		WLAc --> LTAc	0.53	Total Zinc	4.1596343
Acute/Chr. ratio 0=n, 1=y	1	LTA a,c-->WQBL avg	1.31		
Aquatic,acute only1=y,0=n		LTA a,c-->WQBL max	3.11	Aquatic Life, Dissolved	
		LTA h --> WQBL max	2.38	Metal Criteria, ug/L	
Page Numbering/Labeling		WQBL-limit/report	2.13	METALS	ACUTE CHRONIC
Appendix	Appendix A-1	WLA Fraction	1	Arsenic	339.8 150
Page Numbers 1=y, 0=n	1	WQBL Fraction	1	Cadmium	62.865416 1.6408066
Input Page # 1=y, 0=n	1			Chromium III	918.63465 297.99558
		Conversions:		Chromium VI	15.712 10.582
Fischer/Site Specific inputs:		ug/L-->lbs/day Qef	3.336E-06	Copper	33.332964 21.028899
Pipe=1,Canal=2,Specific=3		ug/L-->lbs/day Qeo	0	Lead	127.18513 4.9562218
Pipe width, feet		ug/L-->lbs/day Qr	0.000834	Mercury	1.734 0.012
ZID plume dist., feet		lbs/day-->ug/L Qeo	299760.19	Nickel	2410.1059 267.66159
MZ plume dist., feet		lbs/day-->ug/L Qef	299760.19	Zinc	195.03655 178.09795
HHnc plume dist., feet		diss-->tot 1=y0=n	1		
HHc plume dist., feet		Cu diss->tot1=y0=n	1	Site Specific Multiplier Values:	
		cfs-->MGD	0.6463	*CV =*	---
Fischer/site specific dilutions:				N =	---
F/specific ZID Dilution =	---	Receiving Stream:		WLAa --> LTAa	---
F/specific MZ Dilution =	---	Default Hardness=	25	WLAc --> LTAc	---
F/specific HHnc Dilution=	---	Default TSS=	10	LTA a,c-->WQBL avg	---
F/specific HHc Dilution=	---	99 Crit., 1=y, 0=n	1	LTA a,c-->WQBL max	---
				LTA h --> WQBL max	---

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	Cu	Effluent	Effluent	MQL	Effluent	95th %	Numerical Criteria			HH
Parameters	*Instream*	*/Tech*	*/Tech*		*1=No*	*estimate*	Acute	*Chronic*	*HHNDW*	*Carcinogen*
	Conc.	(Avg)	(Max)		0=95 %	Non-Tech	FW	FW		Indicator
	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	"C"
NONCONVENTIONAL										
Total Phenols (4AAP)				5			700	350	50	
3-Chlorophenol				10						
4-Chlorophenol				10			383	192		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenocy-acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10			715.56708	315.87717		
Total Cadmium				1			231.1161	6.032201		
Chromium III				10			4750.8657	1541.1317		
Chromium VI				10			15.712	10.582		
Total Copper				10			110.76794	69.88061		
Total Lead				5			787.9986	30.707174		
Total Mercury				*0.2*			*4.99618*	*0.0345756*		
Total Nickel				40			6871.5347	763.13904		
Total Zinc		38992	141000	20	1		811.28072	740.82233		
Total Cyanide				20			45.9	5.2	12844	
DIOXIN										
2,3,7,8 TCDD; dioxin				1.0E-05					7.2E-07	C
VOLATILE COMPOUNDS										
Benzene				10			2249	1125	12.5	C
Bromoform				10			2930	1465	34.7	C
Bromodichloromethane				10					3.3	C
Carbon Tetrachloride				10			2730	1365	1.2	C
Chloroform				10			2890	1445	70	C
Dibromochloromethane				10					5.08	C
1,2-Dichloroethane				10			11800	5900	6.8	C
1,1-Dichloroethylene				*10*			*1160*	*580*	*0.58*	C
1,3-Dichloropropylene				10			606	303	162.79	
Ethylbenzene				10			3200	1600	8100	
Methyl Chloride				50			55000	27500		
Methylene Chloride				20			19300	9650	87	C
1,1,2,2-Tetrachloro-ethane				10			932	466	1.8	C

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(*1) Toxic Parameters	(*12) WLAa Acute ug/L	(*13) WLAc Chronic ug/L	(*14) WLAh HHNDW ug/L	(*15) LTAa Acute ug/L	(*16) LTAc Chronic ug/L	(*17) LTAh HHNDW ug/L	(*18) Limiting A,C,HH ug/L	(*19) WQBL Avg 005 ug/L	(*20) WQBL Max 005 ug/L	(*21) WQBL Avg 005 lbs/day	(*22) WQBL Max 005 lbs/day	(*23) Need WQBL?
NONCONVENTIONAL												
Total Phenols (4AAP)	12010.25	56901.25	8128.75	3843.28	30157.663	8128.75	3843.28	5034.6968	11952.601	0.0167957	0.0398739	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	6571.3225	31214.4	---	2102.8232	16543.632	---	2102.8232	2754.6984	6539.7802	0.0091897	0.0218167	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenocy-acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	12277.342	51353.731	---	3928.7495	27217.477	---	3928.7495	5146.6619	12218.411	0.0171693	0.0407606	no
Total Cadmium	3965.3745	980.68508	---	1268.9198	519.76309	---	519.76309	680.88965	1616.4632	0.0022714	0.0053925	no
Chromium III	81512.979	250549.49	---	26084.153	132791.23	---	26084.153	34170.241	81121.716	0.1139919	0.270622	no
Chromium VI	269.57864	1720.3687	---	86.265165	911.79538	---	86.265165	113.00737	268.28466	0.000377	0.000895	no
Total Copper	1900.5009	11360.84	---	608.16029	6021.2453	---	608.16029	796.68998	1891.3785	0.0026578	0.0063096	no
Total Lead	13520.086	4992.2189	---	4326.4275	2645.876	---	2645.876	3466.0976	8228.6743	0.0115629	0.0274509	no
Total Mercury	85.721958	5.6211347	---	27.431026	2.9792014	---	2.9792014	3.9027538	9.2653162	1.302E-05	3.091E-05	no
Total Nickel	117898.36	124067.33	---	37727.474	65755.685	---	37727.474	49422.991	117332.44	0.1648751	0.391421	no
Total Zinc	13919.549	120439.19	---	4454.2557	63832.771	---	4454.2557	5835.0749	13852.735	0.0194658	0.0462127	yes
Total Cyanide	787.52925	845.39	2088113.3	252.00936	448.0567	2088113.3	252.00936	330.13226	783.74911	0.0011013	0.0026146	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	0.0011641	---	---	0.0011641	0.0011641	0.0011641	0.0027705	3.883E-09	9.242E-09	no
VOLATILE COMPOUNDS												
Benzene	38587.218	182896.88	20209.375	12347.91	96935.344	20209.375	12347.91	16175.762	38401.999	0.0539623	0.1281091	no
Bromoform	50271.475	238172.38	56101.225	16086.872	126231.36	56101.225	16086.872	21073.802	50030.172	0.0703022	0.1669007	no
Bromodichloromethane	---	---	5335.275	---	---	5335.275	5335.275	5335.275	12697.955	0.0177985	0.0423604	no
Carbon Tetrachloride	46839.975	221914.88	1940.1	14988.792	117614.88	1940.1	1940.1	1940.1	4617.438	0.0064722	0.0154038	no
Chloroform	49585.175	234920.88	113172.5	15867.256	124508.06	113172.5	15867.256	20786.105	49347.166	0.0693424	0.1646221	no
Dibromochloromethane	---	---	8213.09	---	---	8213.09	8213.09	8213.09	19547.154	0.0273989	0.0652093	no
1,2-Dichloroethane	202458.5	959192.5	10993.9	64786.72	508372.03	10993.9	10993.9	10993.9	26165.482	0.0366757	0.087288	no
1,1-Dichloroethylene	19902.7	94293.5	937.715	6368.864	49975.555	937.715	937.715	937.715	2231.7617	0.0031282	0.0074452	no
1,3-Dichloropropylene	10397.445	49260.225	26465.584	3327.1824	26107.919	26465.584	3327.1824	4358.6089	10347.537	0.0145403	0.0345194	no
Ethylbenzene	54904	260120	1316857.5	17569.28	137863.6	1316857.5	17569.28	23015.757	54640.461	0.0767806	0.1822806	no
Methyl Chloride	943662.5	4470812.5	---	301972	2369530.6	---	301972	395583.32	939132.92	1.319666	3.1329474	no
Methylene Chloride	331139.75	1568848.8	140657.25	105964.72	831489.84	140657.25	105964.72	138813.78	329550.28	0.4630828	1.0993797	no
1,1,2,2-Tetrachloro-ethane	15990.79	75759.95	2910.15	5117.0528	40152.774	2910.15	2910.15	2910.15	6926.157	0.0097083	0.0231057	no

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(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	Cu	Effluent	Effluent	MQL	Effluent	95th %	Numerical Criteria			HH
Parameters	Instream	/Tech	/Tech		1=No 95%	estimate	Acute	Chronic	HHNDW	Carcinogen
	Conc.	*(Avg)*	*(Max)*		*0=95 %*	*Non-Tech*	*FW*	*FW*		*Indicator*
	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	"C"
VOLATILE COMPOUNDS (cont'd)										
Tetrachloroethylene				10			1290	645	2.5	C
Toluene				10			1270	635	46200	
1,1,1-Trichloroethane				10			5280	2640		
1,1,2-Trichloroethane				10			1800	900	6.9	C
Trichloroethylene				10			3900	1950	21	C
Vinyl Chloride				10					35.8	C
ACID COMPOUNDS										
2-Chlorophenol				10			258	129	126.4	
2,4-Dichlorophenol				10			202	101	232.6	
BASE NEUTRAL COMPOUNDS										
Benzidine				50			250	125	0.00017	C
Hexachlorobenzene				10					0.00025	C
Hexachlorabutadiene				10			5.1	1.02	0.11	C
PESTICIDES										
Aldrin				0.05			3		0.0004	C
Hexachlorocyclohexane (gamma BHC, Lindane)				0.05			5.3	0.21	0.2	C
Chlordane				*0.2*			*2.4*	*0.0043*	*0.00019*	C
4,4'-DDT				0.1			1.1	0.001	0.00019	C
4,4'-DDE				0.1			52.5	10.5	0.00019	C
4,4'-DDD				0.1			0.03	0.006	0.00027	C
Dieldrin				0.1			0.2374	0.0557	0.00005	C
Endosulfan				0.1			0.22	0.056	0.64	
Endrin				0.1			0.0864	0.0375	0.26	
Heptachlor				0.05			0.52	0.0038	0.00007	C
Toxaphene				5			0.73	0.0002	0.00024	C
Other Parameters:										
Fecal Col.(col/100ml)										
Chlorine							19	11		
Ammonia								4000		
Chlorides										
Sulfates										
TDS										

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(*1) Toxic Parameters	(*12) WLAa Acute ug/L	(*13) WLAc Chronic ug/L	(*14) WLAh HHNDW ug/L	(*15) LTAa Acute ug/L	(*16) LTAc Chronic ug/L	(*17) LTAh HHNDW ug/L	(*18) Limiting A,C,HH ug/L	(*19) WQBL Avg 005 ug/L	(*20) WQBL Max 005 ug/L	(*21) WQBL Avg 005 lbs/day	(*22) WQBL Max 005 lbs/day	(*23) Need WQBL?
Tetrachloroethylene	22133.175	104860.88	4041.875	7082.616	55576.264	4041.875	4041.875	4041.875	9619.6625	0.0134837	0.0320912	no
Toluene	21790.025	103235.13	7510965	6972.808	54714.616	7510965	6972.808	9134.3785	21685.433	0.0304723	0.0723426	no
1,1,1-Trichloroethane	90591.6	429198	---	28989.312	227474.94	---	28989.312	37975.999	90156.76	0.1266879	0.300763	no
1,1,2-Trichloroethane	30883.5	146317.5	11155.575	9882.72	77548.275	11155.575	9882.72	12946.363	30735.259	0.0431891	0.1025328	no
Trichloroethylene	66914.25	317021.25	33951.75	21412.56	168021.26	33951.75	21412.56	28050.454	66593.062	0.0935763	0.2221545	no
Vinyl Chloride	---	---	57879.65	---	---	57879.65	57879.65	57879.65	137753.57	0.1930865	0.4595459	no
ACID COMPOUNDS												
2-Chlorophenol	4426.635	20972.175	20549.48	1416.5232	11115.253	20549.48	1416.5232	1855.6459	4405.3872	0.0061904	0.0146964	no
2,4-Dichlorophenol	3465.815	16420.075	37814.945	1109.0608	8702.6398	37814.945	1109.0608	1452.8696	3449.1791	0.0048468	0.0115065	no
BASE NEUTRAL COMPOUNDS												
Benzidine	4289.375	20321.875	0.2748475	1372.6	10770.594	0.2748475	0.2748475	0.2748475	0.6541371	9.169E-07	2.182E-06	no
Hexachlorobenzene	---	---	0.4041875	---	---	0.4041875	0.4041875	0.4041875	0.9619663	1.348E-06	3.209E-06	no
Hexachlorabutadiene	87.50325	165.8265	177.8425	28.00104	87.888045	177.8425	28.00104	36.681362	87.083234	0.0001224	0.0002905	no
PESTICIDES												
Aldrin	51.4725	---	0.6467	16.4712	---	0.6467	0.6467	0.6467	1.539146	2.157E-06	5.135E-06	no
Hexachlorocyclohexane (gamma BHC, Lindane)	90.93475	34.14075	323.35	29.09912	18.094598	323.35	18.094598	23.703923	56.274198	7.908E-05	0.0001877	no
Chlordane	41.178	0.6990725	0.3071825	13.17696	0.3705084	0.3071825	0.3071825	0.3071825	0.7310944	1.025E-06	2.439E-06	no
4,4'-DDT	18.87325	0.162575	0.3071825	6.03944	0.0861648	0.3071825	0.0861648	0.1128758	0.2679724	3.766E-07	8.94E-07	no
4,4'-DDE	900.76875	1707.0375	0.3071825	288.246	904.72988	0.3071825	0.3071825	0.3071825	0.7310944	1.025E-06	2.439E-06	no
4,4'-DDD	0.514725	0.97545	0.4365225	0.164712	0.5169885	0.4365225	0.164712	0.2157727	0.5122543	7.198E-07	1.709E-06	no
Dieldrin	4.0731905	9.0554275	0.0808375	1.303421	4.7993766	0.0808375	0.0808375	0.0808375	0.1923933	2.697E-07	6.418E-07	no
Endosulfan	3.77465	9.1042	104.048	1.207888	4.825226	104.048	1.207888	1.5823333	3.7565317	5.279E-06	1.253E-05	no
Endrin	1.482408	6.0965625	42.2695	0.4743706	3.2311781	42.2695	0.4743706	0.6214254	1.4752924	2.073E-06	4.922E-06	no
Heptachlor	8.9219	0.617785	0.1131725	2.855008	0.3274261	0.1131725	0.1131725	0.1131725	0.2693506	3.775E-07	8.986E-07	no
Toxaphene	12.524975	0.032515	0.38802	4.007992	0.017233	0.38802	0.017233	0.0225752	0.0535945	7.531E-08	1.788E-07	no
Other Parameters:												
Fecal Col.(col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	325.9925	1788.325	---	104.3176	947.81225	---	104.3176	136.65606	324.42774	0.0004559	0.0010823	no
Ammonia	---	650300	---	---	344659	---	344659	451503.29	1071889.5	1.506215	3.5758233	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no

APPENDIX A-1 LA0084123, AI No. 3262

Documentation and Explanation of Water Quality Screen
and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Jacks Coulee
Critical Flow, Qrc (cfs): 1.3
Harmonic Mean Flow, Qrh (cfs): 4
Segment No.: 060904
Receiving Stream Hardness (mg/L): 210 mg/l
Receiving Stream TSS (mg/L): 12 mg/l
MZ Stream Factor, Fs: N/A
Plume distance, Pf: N/A

Effluent Characteristics:

Company: hoh-PAK Laboratory, Inc.
Facility flow, Qe (MGD): 0.0004
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0109908

Variable Definition:
Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow , MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 \times Fs + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{} - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{}$$

Dilution Factor Qe

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2}}{2.38\ Pw^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{Qe}{(Qrh \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrh \times 0.6463 \times Cu)}{Qe}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{*}}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2*}}{2.38\ Pw^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.

If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr-Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:
LTAa = WLAa X 0.32
LTAc = WLAc X 0.53
LTAh = WLAh

WQBL Calculations:
Select most limiting LTA to calculate daily max and monthly avg WQBL

If aquatic life LTA is more limiting:
Daily Maximum = Min(LTAa, LTAc) X 3.11
Monthly Average = Min(LTAc, LTAc) X 1.31

If human health LTA is more limiting:
Daily Maximum = LTAh X 2.38
Monthly Average = LTAh

Mass Balance Formulas:

mass (lbs/day): (ug/L) X 1/1000 X (flow, MGD) X 8.34 = lbs/day

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{\text{(flow, MGD) X 8.34 X 1/1000}} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

(*1) Parameter being screened.
(*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).
(*3) Monthly average effluent or technolgy value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*4) Daily maximum technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present

on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

(*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.

(*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.

(*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness Dependent Criteria:

Metal	Formula
Cadmium	$e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

Metal	Multiplier
Arsenic	$1 + 0.48 \times TSS^{-0.73} \times TSS$
Cadmium	$1 + 4.00 \times TSS^{-1.13} \times TSS$
Chromium III	$1 + 3.36 \times TSS^{-0.93} \times TSS$
Copper	$1 + 1.04 \times TSS^{-0.74} \times TSS$
Lead	$1 + 2.80 \times TSS^{-0.80} \times TSS$
Mercury	$1 + 2.90 \times TSS^{-1.14} \times TSS$
Nickel	$1 + 0.49 \times TSS^{-0.57} \times TSS$
Zinc	$1 + 1.25 \times TSS^{-0.70} \times TSS$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

Metal	Multiplier

Copper	$1 + (10^{4.86} \times TSS^{-0.72} \times TSS) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times TSS^{-0.85} \times TSS) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times TSS^{-0.52} \times TSS) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

(*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.
Hardness dependent criteria:

Metal	Formula
Cadmium	$e^{(0.7852[\ln(hardness)] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(hardness)] + 0.7614)}$
Copper	$e^{(0.8545[\ln(hardness)] - 1.3860)}$
Lead	$e^{(1.2730[\ln(hardness)] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(hardness)] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(hardness)] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

(*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primarry contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.

(*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.

(*12) Wasteload Allocation for acute aquatic criteria (WLAa). Dilution type WLAa is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAa formulas for streams:

$$WLAa = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAa formulas for static water bodies:
WLAa = (Cr-Cu)/Dilution Factor)
Cr represents aquatic acute numerical criteria from column (*8).
If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAc formula:

$$WLAc = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:
WLAc = (Cr-Cu)/Dilution Factor)
Cr represents aquatic chronic numerical criteria from column (*9).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc,Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:
WLAh = (Cr-Cu)/Dilution Factor)
Cr represents human health numerical criteria from column (*10).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*15) Long Term Average for aquatic numerical criteria (LTAa). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAa.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation. If standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then the type of limit, Aquatic or Human Health (HH), is indicated.

(*19) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{limiting\ aquatic}$ X 1.31 = $WQBL_{monthly\ average}$). If human health criteria was the most limiting criteria then LTAh = $WQBL_{monthly\ average}$. If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the chronic aquatic life criteria shall appear in this column depending on which is more limiting.

(*20) End of pipe Water Quality Based Limit (WQBL) daily maxium in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 3.11 = $WQBL_{daily\ max}$). If human health criteria was the most limiting criteria then LTAh is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 2.38 = $WQBL_{daily\ max}$). If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the acute aquatic life criteria shall appear in this column depending on which is more limiting.

(*21) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Monthly average WQBL, ug/l/1000 X facility flow, MGD X 8.34 = monthly average WQBL, lbs/day.

(*22) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily maximum WQBL, lbs/day.

(*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.